NUGENIA
NUclear GENeration II & III Association

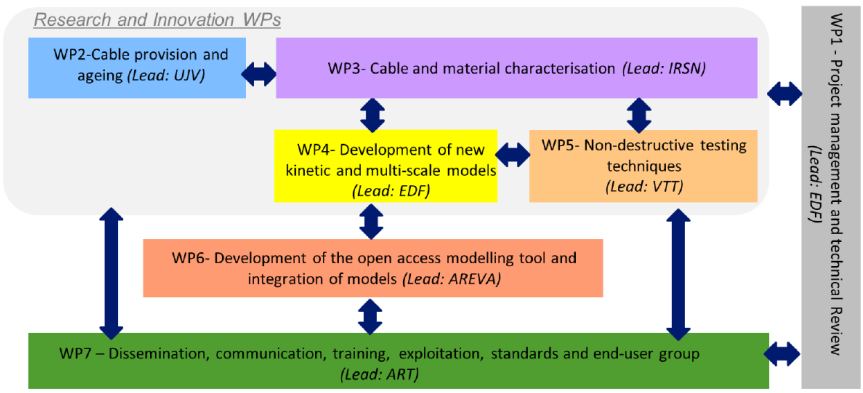
TeaM CABLES

Tools and Methodologies for an efficient ageing management of nuclear power plant Cables

OBJECTIVES

TeaM Cables aims at providing NPP operators with a novel methodology for efficient and reliable NPP cable ageing management by i) developing cable ageing models and algorithms, which are based on multi-scale studies and can be tailored to cover variations in chemistry (resin, fillers, additives …), ii) developing methodologies for non-destructive testing techniques and their associated criteria identified from multiscale relations, iii) developing a novel numerical tool, integrating all the models developed and providing the residual lifetime of cables by crossing non-destructive measurements with predictive models and knowledge of cable exposure conditions (wiring network in the NPP). Such methods and tools would allow NPP operators to safely extend the plant life duration of generation II and III reactors and thus contribute to the production of sustainable energy responding to future energy needs.

DESCRIPTION OF WORK



The study will cover both normal conditions, *i.e.* soft accelerated ageing representative of normal conditions inside a reactor building, and abnormal conditions, *i.e.* exposure to design basis event and/or severe accidents.

MAIN DELIVERABLES OR RESULTS

- Proposals for elaboration and revision of standards of characterisation tests and NDT techniques
- Database with key ageing markers for ageing during normal and accidental conditions
- Multiscale models to predict polymer ageing by taking into account polymer formulation. The approach will be generic, thus applicable to various polymers families and formulations
- New specifications for non-destructive techniques and micro-sampling techniques usable for residual lifetime calculation.
- Numerical tool which supports the cable ageing management by crossing the wiring network in the NPP with the cable exposure conditions and on-site characterizations to provide a residual lifetime prediction based on accurate multiscale models.

DURATION

1 September 2017 – 28 February 2022
4.5 years

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PARTNERS

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